



By Elaine Justus

# Getting on Track with TRAC

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# If you asked Emily Barnes, a sophomore at Grandview High School in Grandview, Mo., TRAC should be available in every high school in America.

“Every student should get involved if they can. It’s really, really fun and you learn a lot at the same time. It makes you look at everyday stuff in a whole new way. It’s exciting to learn things that way.”

What is Emily talking about, and what is “TRAC”? TRAC stands for Transportation and Civil Engineering.



**Dorothy Walk, science teacher and TRAC coordinator at Grandview High School, and Emily Barnes, a sophomore**

According to the official definition, the program is designed to be “a powerful, curriculum-relevant learning tool. Under the guidance of a teacher and the assistance of volunteer engineers, students are able to use their science and math lessons, and

engage themselves in ‘real world’ problem solving related to transportation and civil engineering.”

To put it simply, the program allows engineers to come into the classroom and get students excited about engineering.

The process starts about a year ahead of the first classroom visit. A science or math teacher determines how the TRAC program and activities best integrates into his or her classroom, and contacts the local Missouri Department of Transportation TRAC volunteer. Jointly, they attend a TRAC training course to familiarize themselves with each other and with the TRAC equipment.

The equipment and software are placed in a classroom and typically left there for use throughout the year. This gives the teacher an opportunity to incorporate related TRAC activities into the current curriculum. It also allows students the opportunity to use the computer on their own.

The Transportation Research Activities Center, or TRAC PAC, is composed of a computer, a mobile laboratory and various lab activities such as:

- LabPro digital interface
- LabPro interface software
- Motion detector



**Students at West Junior High School in Columbia learn about crash cushioning for collisions, and the physics involved in keeping people and vehicles safe in dangerous situations.**

- Force probe
- Microphone (sound probe)
- Motion plotter
- Sound-level meter
- Bridge Builder software
- Sim City 2000 software
- PC Solve software
- Magnetic levitation materials
- Model car
- Intelligent Transportation Systems Activity software

All of this is provided free of charge for the use of the participating school.

Some of the software programs include: Sim City, which involves urban planning; Bridge Builder, which involves structural engineering principles and bridge design; and Fuel

## Track Record

TRAC, which stands for Transportation and Civil Engineering, is an international program active in 26 states in the United States, two countries (South Africa and Tanzania) and the U.S. territory of Puerto Rico.

The TRAC program was developed by the American Association of State Highway and Transportation Officials in 1993, when a decline was noticed in the number of civil-engineering graduates, especially among women, minorities and the eco-

nomically disadvantaged. With activities and curriculum targeted to middle- and high-school students, the program focuses on the disciplines of math, science and social studies. Everything is geared to dovetail perfectly with existing school curriculums.

In Missouri, MoDOT provides approximately 45 volunteers, who are active participants in 20 schools statewide.

Tate Jackson, now the National TRAC manager for AASHTO, first got involved

with TRAC as a volunteer during its inception in 1993. He subsequently became the lead trainer for the state of Maryland until AASHTO offered him the opportunity to head up the program. When asked what he considered the biggest success of the program, he responded, “Seeing kids learning. I just love having the kids realize that there are other options for them and seeing they can accomplish something they didn’t think they could accomplish.”



For Your Head, which deals with roadway safety. All of them are designed to allow students to teach themselves what they need to know to solve problems. By exploring several solutions, students become involved in mathematics, physical science and social science.

"This is a wonderful opportunity for school districts that are financially strapped, and we all are these days," says Dorothy Walk, science teacher and TRAC coordinator for Grandview High School. "The best part is this classroom learning becomes real-world learning when the MoDOT TRAC volunteers make their appearance."

Three times a year, TRAC volunteers from MoDOT come into the classroom at the invitation of the teacher. They are there to be role models, educators and guides, but most of all mentors.

According to Walk, "This is often the first time students have ever even seen a real-life engineer, and it can be a shock for them. My first TRAC experience involved two young, exuberant female engineers. No thick glasses, no pocket protectors, no withdrawn personalities – just regular, fun people."

Not only are old stereotypes exploded, but students learned, many for the first time,

that a career in engineering is an attainable goal regardless of your sex, culture or income. Best of all, the volunteers bring the real world into the classroom, and sometimes they even take the classroom into the real world.

"It was exciting," says Sophomore Emily Barnes, "They took us all to the construction site for the Grandview Triangle. I had no idea building roads and bridges could be so complicated and involve so many different people from so many different disciplines."

With the two-pronged approach of hands-on curriculum classroom experience, and the involvement of actual transportation engi-



neers, a well-rounded educational opportunity is now available to schools everywhere.

"Like all of education, the payback is long-term," Walk says. "We are planting a seed here that may be a long time growing, but I know some of my students will begin to think about engineering as a future career."

*Elaine Justus is the Public Information and Outreach Manager for MoDOT's Northwest District.*



**Images from traffic simulation/animation program**

## To Find Out More

**How can you find out more or get involved? Contact Lisa Lamons, MoDOT senior human resources specialist and the Regional Center director for TRAC, at (573) 526-4856.**

**"We would love to involve more schools and more MoDOT employees in this wonderful program," Lamons says. "It's definitely a win-win situation."**